EXTRA REMARKS.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N.; Long. 6° 15′ W., for the Month of January, 1887.

Mean Height of Barometer,	29·896 inches.
Maximal Height of Barometer (on 21st, at 9 a.m.),	30·623 ,,
Minimal Height of Barometer (on 5th, at 9 p.m.),	28·852 ,,
Mean Dry-bulb Temperature,	41·0°.
Mean Wet-bulb Temperature,	39·2°.
Mean Dew-point Temperature,	37·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·224 inch.
Mean Humidity,	86·1 per cent.
Highest Temperature in Shade (on 26th),	57·4°.
Lowest Temperature in Shade (on 10th),	23·1°.
Lowest Temperature on Grass (Radiation) (on 10th),	18·0°.
Mean Amount of Cloud,	62·5 per cent.
Rainfall (on 16 days),	1·816 inches.
Greatest Daily Rainfall (on 10th),	·440 inch.
General Directions of Wind,	S.W., W.

Remarks.

Cold, changeable, and inclement until the 19th, the weather was afterwards singularly mild and fine—at all events in the east of Ireland. The winds blew freshly from points between W. and S., while scarcely any rain fell near Dublin for a period of ten days, and the mean temperature of the week ending Saturday, the 29th, was in the city as much as 9° above the average. In the west of Ireland the southerly winds blew strongly, often with the force of a gale, and rain fell frequently. The warm weather after the 20th raised the mean temperature of the whole month to the average.

In Dublin the mean temperature (41·5°) was almost precisely the average (41·4°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 41·0°. In the twenty-two years ending with 1886, January was coldest in 1881 (M. T. = 33·2°) and warmest in 1875 (M. T. = 46·3°). In 1867, the M. T. was 35·7°, and in 1865 it was 37·8°. In 1871 and in 1886, the M. T. was 37·9°; in the year 1879 (the cold year) it was 35·3°. As a general rule, January in Dublin is not colder, but rather a shade warmer, than December. This is owing to the full development in January of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity.

The mean height of the barometer was 29·896 inches, or 0·015 inch above the average value for January—namely, 29·881 inches. The mercury rose to 30·623 inches at 9 a.m. of the 21st, and fell to 28·852 inches at 9 p.m. of the 5th. The observed range of atmospherical pressure was, therefore, as much as 1·771 inches—that is, a little over one inch and three-quarters. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 41·0°, or 3·8° above the value for December, 1886; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 40·7°, or only 0·1° below the average mean temperature for January, calculated in the same way, in the twenty years, 1865–84, inclusive (40·8°). The arithmetical mean of the maximal and minimal readings was 41·5°, compared with a twenty years' average of 41·4°. On the 26th the thermometer in the screen rose to 57·4°—wind S.S.W.; on the 10th the temperature fell to 23·1°—wind calm. The minimum on the grass was 18·0° on the same date. The rainfall was 1·816 inches, distributed over 16 days. The average rainfall for January in the twenty years, 1865–84, inclusive, was 2·243 inches, and the average number of rainy days was 17·1. The rainfall and the rainy days, therefore, were both perceptibly below the average. In 1877 the rainfall in January was very large—4·322 inches on 25 days; in 1869 also 4·258 inches fell—on, however, only 18 days. On the other hand, in 1876, only ·406 of an inch was measured on but 9 days; and in 1880, the rainfall was only ·563 of an inch on but 8 days. In January, 1886, 3·244 inches of rain were measured on as many as 26 days.

A solar halo was seen on the 10th, and a lunar halo on the 2nd. The atmosphere was foggy on the 7th, 10th, 14th, and 18th. High winds were noted on 13 days, reaching the force of a gale on two days, the 11th and 31st. Hail fell on the 3rd and 7th, and snow or sleet on the 4th, 6th, 7th, 9th, and 16th.

At the beginning, a band of high atmospherical pressure stretched from N.E. to S.W. from the Baltic to England. South-westerly winds and mild weather prevailed along the Atlantic coasts of Ireland, Scotland, and Norway, while sharp frost held in England—at 8 a.m. of the 1st the thermometer stood at 22° in London, 17° at Loughborough, in Leicestershire; 15° at Oxford, and 14° at Cambridge. At 9 a.m. it read 37° in Dublin, but at 8 a.m. it was 48° at Valentia Island. During New Year's Day, temperature did not rise above 21° at Oxford.

In the course of the week ending Saturday, 8th, cyclonic conditions prevailed. On Monday, the 3rd, the cold was very sharp, except in the N.W., where thermometrical readings were 20° to 25° higher than those over the S.E. of England. After the 4th, the barometer remained very low over the British Islands for several days—in fact, values were below 29 inches over a large area for 60 hours or upwards. This low pressure was accompanied by dull, cold, unsettled weather, fitful changes of temperature, showers of rain and sleet or snow, and a complete cyclonic circulation of moderate winds. On the evening of the 7th snow fell heavily in Dublin—the snowstorm being succeeded by sharp frost.

The weather of the second week (ending Saturday, 15th) was again unsettled and unusually cold. At the commencement sharp frost held in and about Dublin, where the thermometer read 24° at 9 a.m of the 10th. During this day, however, a rapid thaw set in, temperature rising at night to 50·9°, with a southerly gale and heavy rain (·440 inch—the maximal downpour of the month). During the remainder of the week, the weather was influenced by two systems of high pressure. Of these the first came in from the Atlantic on the 11th, and travelled quickly eastwards. In Dublin the barometer rose nearly an inch in the 24 hours ending 9 a.m. of the 12th. Frost set in for a short time. Another high pressure area advanced from the westward on the 14th, but it too proved short-lived.

In the third week (16th–22nd) a fitful but decided rise of temperature was in progress—particularly in Ireland and Scotland. On Sunday, a cold undercurrent of air from S.E. prevailed, and in Dublin a light fall of snow occurred in the afternoon. Next morning a cyclonic system was found off the N.W. of Ireland, and temperature was rising, with squally S. to S.W. winds. At 8 a.m. extraordinary differences in temperature were reported, readings varying from 49° at Valentia, in Kerry, to 20° in London, 19° at Oxford and Cambridge, and 15° at Loughborough. These last-named temperatures represented the last severe frost experienced during the month in Great Britain.

Throughout the fourth week, atmospherical pressure was highest in an anticyclone, the centre of which lay permanently over France and Germany, and lowest over Finland, Lapland, and off the N. and N.W. coasts of the British Isles. Over the Continent the weather was continuously very cold, foggy, or hazy. In England the fogs occasionally cleared and temperature rose and fell alternately, while the sky was brilliantly clear at times. In the east of Ireland remarkably fine, mild weather prevailed—the mean temperature in Dublin being no less than 9° above the average, and the week being practically rainless; in the west of Ireland, however, the weather was unsettled, with cloudy skies, squally S. to W. winds, and frequent rains.

During the last two days the fine weather broke up, and on the 31st there was a south-westerly gale.

On the whole, January, 1887, was cold on the Continent and over the greater part of England, mild in Ireland, Scotland, and Norway.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N.; Long. 6° 15′ W., for the Month of February, 1887.

Mean Height of Barometer,	30·256 inches.
Maximal Height of Barometer (on 9th, at 9 a.m.),	30·670 ,,
Minimal Height of Barometer (on 2nd, at 3 p.m.),	29·390 ,,
Mean Dry-bulb Temperature,	42·4°.
Mean Wet-bulb Temperature,	39·8°.
Mean Dew-point Temperature,	36·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·220 inch.
Mean Humidity,	81·2 per cent.
Highest Temperature in Shade (on 27th),	57·1°.
Lowest Temperature in Shade (on 10th),	26·0°.
Lowest Temperature on Grass (Radiation) (on 10th),	20·9°.
Mean Amount of Cloud,	51·6 per cent.
Rainfall (on 11 days),	·541 inch.
Greatest Daily Rainfall (on 2nd),	·136 inch.
General Directions of Wind,	W., S.W., N.E.

Remarks.

Showery and squally at first, the weather soon became quiet, dry, and fine. From the 4th to the 21st inclusive the barometer was uninterruptedly above 30 inches, and conditions were for the most part anticyclonic. After the 6th only ·158 of an inch of rain fell on five days, and the month was one of the driest Februarys on record. On the whole, the weather resembled that of the preceding January, although the extremes were less marked; and as in January the S. and S.W. winds often rose to the force of a gale, with rain, along the Atlantic seaboard both in Ireland and Scotland, while the weather was quieter, drier, and colder in England.

In Dublin the mean temperature (42·9°) was slightly below the average (43·2°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 42·4°. In the twenty-two years ending with 1886, February was coldest in 1873 (M. T. = 37·9°) and warmest in 1869 (M. T. = 46·7°). In 1886, the M. T. was 39·7°; in the year 1879 (the cold year) it was 40·1°. As a general rule, February in Dublin is only a shade colder than March. This is owing to the continued development in February of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity, while the Continental anticyclone embraces the British Isles and Scandinavia in March, causing easterly winds.

The mean height of the barometer was 30·256 inches, or no less than 0·394 inch above the average value for February—namely, 29·862 inches. The mercury rose to 30·670 inches at 9 a.m. of the 9th, and fell to 29·390 inches on the afternoon of the 2nd. The observed range of atmospherical pressure was, therefore, as much as 1·280 inches—that is, a little over one inch and a quarter. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 42·4°, or 1·4° above the value for January, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 41·9°, or 0·6° below the average mean temperature for February, calculated in the same way, in the twenty years, 1865–84, inclusive (42·5°). The arithmetical mean of the maximal and minimal readings was 42·9°, compared with a twenty years' average of 43·2°. On the 27th the thermometer in the screen rose to 57·1°—wind S.S.E.; on the 10th the temperature fell to 26·0°—wind calm. The minimum on the grass was 20·9° on the same date. The rainfall was only ·541 inch, distributed over 11 days. The average rainfall for February in the twenty years, 1865–84, inclusive, was 2·244 inches, and the average number of rainy days was 17·6. The rainfall and the rainy days, therefore, were both very much below the average. In 1883 the rainfall in February was large—3·752 inches on 17 days; in 1879 also 3·706 inches fell on 23 days. On the other hand, in 1873, only ·925 of an inch was measured on but 8 days. The rainfall in the present year was much the smallest recorded in February for very many years. In February, 1886, 1·981 inches of rain were measured on 15 days.

A lunar halo was seen on the 1st, and an aurora borealis on the 12th. The atmosphere was foggy on the 6th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, and 28th. High winds were noted on 11 days, reaching the force of a gale on two days, the 3rd and the 24th.

In the period ending Saturday, the 5th, the barometer was high over Germany and France, low and unsteady to the N.W. of the British Islands, over which the dominant systems of atmospherical pressure were cyclonic. Squally S. to W. winds, changeable temperature, and unsettled showery weather were, in consequence, prevalent.

The weather of the week ending Saturday, the 12th, was generally fine and quiet and much colder than that experienced during the three preceding weeks. Throughout the period an anticyclone lay over Western Europe. Until the 11th, the centre of highest pressure lay to the eastward of Ireland, where light S.E. or S. winds prevailed; but on the day named the barometer was highest off the coasts of Donegal, and the wind backed to N.E. The mean height of the barometer in Dublin during this week was 30·607 inches, and the mean temperature was 37·3°, or exactly 7° below that of the previous week. Bright aurora was seen in the North of Ireland on the night of the 12th.

At the commencement of the third week (13th–19th, inclusive) pressure was highest off Mayo and Donegal (30·70 inches); but the barometer soon gave way in that locality, and by Wednesday, the 16th, gradients for S.W. winds were well marked over Ireland. On the night of the 17th a V-shaped depression passed eastwards across the country; in the rear of this system the barometer rose fast and the wind shifted to N.N.W., with a falling temperature. Saturday, the 19th, was very cloudy, but otherwise fine.

During the earlier part of the week ending the 26th, the weather was in a changeable, showery state over the whole of the United Kingdom. Towards the close of the period, however, a marked improvement took place, as the barometer rose in the S. and S.E., and conditions became anticyclonic. In Ireland and Scotland temperature was high for the time of year; in England towards the close of the week, while the sun's rays were distinctly warm, the extension of the anticyclone was accompanied by great terrestrial radiation, so that sharp night frosts were experienced from the 25th to the end of the month.

As in January, the weather generally was cold on the Continent and over the greater part of England, mild in Ireland, Scotland, and Norway.

35·3 ✓ 87

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of March, 1887.

Mean Height of Barometer, - - -	30·101 inches.
Maximal Height of Barometer (on 2nd, at 9 a.m.), -	30·624 „
Minimal Height of Barometer (on 22nd, at 11 p.m.),	29·120 „
Mean Dry-bulb Temperature, - - -	40·5°.
Mean Wet-bulb Temperature, - - -	38·2°.
Mean Dew-point Temperature, - - -	35·2°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·207 inch.
Mean Humidity, - - - - -	81·9 per cent.
Highest Temperature in Shade (on 28th), - -	55·8°.
Lowest Temperature in Shade (on 13th), - -	25·8°.
Lowest Temperature on Grass (Radiation) (on 13th),	20·8°.
Mean Amount of Cloud, - - - -	61·0 per cent.
Rainfall (on 11 days), - - - -	1·485 inches.
Greatest Daily Rainfall (on 2nd), - - -	·594 inch.
General Directions of Wind, - - -	N.W., W., N.E.

Remarks.

Anticyclonic conditions, and quiet, cold, dry weather, prevailed over the British Islands, France, and Germany until the 11th. During this period depressions travelled eastwards across the north of Scandinavia, causing westerly gales and heavy falls of rain on the west coast of Norway. After the 11th conditions became cyclonic, and, as the depressions travelled from N.W. towards S.E., low temperatures and frequent falls of sleet or snow and hail were general over western Europe. On the 21st a deep V-shaped depression came in from the Atlantic, causing sleet and rain; and on the 23rd a still deeper depression passed across England, where a strong S.W. gale occurred. Towards the close of the month an anticyclone again formed, and the weather became fine and quiet.

In Dublin the mean temperature (41·3°) was decidedly below the average (43·5°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 40·5°. In the twenty-two years ending with 1886, March was coldest in 1867 and 1883 (M. T. = 39·0°) and warmest in 1868 (M. T. = 47·3°). In 1886, the M. T. was 41·4°; in the year 1879 (the cold year) it was 42·5°. As a general rule, February in Dublin is only a shade colder than March. This is owing to the continued development in February of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity, while the Continental anticyclone embraces the British Isles and Scandinavia in March, causing easterly winds. In the present year, February was actually 1·6° *warmer* than March, and the temperature even in January was 0·2° above that of the past month.

The mean height of the barometer was 30·101 inches, or as much as 0·221 inch above the average value for March—namely, 29·880 inches. The mercury rose to 30·624 inches at 9 a.m. of the 2nd, and fell to 29·120 inches on the night of the 22nd. The observed range of atmospherical pressure was, therefore, as much as 1·504 inches—that is, a little over one inch and a half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 40·5°, or 1·9° below the value for February, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 40·3°, or 2·4° below the average mean temperature for March, calculated in the same way, in the twenty years, 1865–84, inclusive (42·7°). The arithmetical mean of the maximal and minimal readings was 41·3°, compared with a twenty years' average of 43·5°. On the 28th the thermometer in the screen rose to 55·8°—wind W.N.W.; on the 13th the temperature fell to 25·8°—wind N.W. The minimum on the grass was 20·8° on the same date. The rainfall was 1·485 inches, distributed over 15 days. The average rainfall for March in the twenty years, 1865–84, inclusive, was 2·081 inches, and the average number of rainy days was 16·5. The rainfall and the rainy days, therefore, were decidedly below the average. In 1867 the rainfall in March was very large—4·972 inches on 22 days; in 1866 also 3·629 inches fell on 21 days. On the other hand, in 1871, only ·815 of an inch was measured on 12 days, and in 1874 only ·953 inch fell, also on 12 days. Solar halos appeared on the 26th and 30th. A lunar halo was seen on the 30th, and a faint aurora borealis on the 25th. The atmosphere was foggy on the 4th, 5th, 10th, 11th, 16th, 17th, 19th, 29th, and 30th. High winds were noted on 8 days, reaching the force of a gale on two days, the 23rd and the 27th. Snow or sleet occurred on the 11th, 12th, 13th, 14th, 15th, 17th, 18th, 20th, and 21st—nine days in all; and hail fell on the 12th, 13th, 15th, 16th, 17th, 22nd, 23rd, 24th, and 27th.

In the period ending Saturday, the 5th, the barometer was very high over Germany and France, as well as over the southern portion of the British Islands. The weather was, in consequence, quiet, dull and dry.

The weather of the week ending Saturday, the 12th, was at first generally fine and quiet, with easterly breezes in the S., but light westerly airs in the N. In the course of the week, a gradual but decided change took place in the weather over our islands. The anticyclone gave place to a period of unsteady pressure. On Friday, the 11th, rain fell in Dublin for many hours, and this was succeeded by a heavy fall of snow at night. On the 12th, there were passing showers of snow, hail, and "graupel" (or soft hail)—at night a keen frost occurred, the screened thermometer falling to 19° at Parsonstown and to 25·8° in Dublin.

During nearly the whole of the following week (ending Saturday, the 19th), the dominant pressure system over the United Kingdom and its neighbourhood was ~~been~~ anticyclonic. Low temperatures were reported from all parts, and snow and hail fell in frequent showers.

At the beginning of the week ending the 26th, the distribution of pressure was undergoing a marked change over Western Europe, and on Monday, 21st, the first of a series of deep depressions arrived off our west coasts. The weather fell into a squally, showery state, with gales in most parts of the kingdom. On Wednesday, the 23rd, a very severe S.W. to W. gale prevailed over the south of England, in connection with a depression in the centre of which the barometer fell below 28·900 inches.

After the 27th, the anticyclone again formed, the wind lulled, and the rainy weather cleared off. During the 29th and 30th, the barometer stood at 30·30 inches or upwards over the United Kingdom, but on the 31st a depression advanced quickly from the north-westward to the Shetlands, whence it travelled southward, causing gales and heavy rain and sleet in Great Britain, while it was less severe in Ireland.

The month was very cold—at first dry, then snowy, and finally squally and showery with the exception of the 29th and 30th. In Dublin, the temperature fell to or below 32° on eight days in the screen, and on twenty-six days on the grass. The mean minimal temperature on the grass was 29·2°, compared with 29·8° in February and 30·8° in January.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of April, 1887.

Mean Height of Barometer,	30·051 inches.
Maximal Height of Barometer (on 17th, at 9 a.m.),	30·636 „
Minimal Height of Barometer (on 23rd, at 9 a.m.),	29·081 „
Mean Dry-bulb Temperature,	44·3°.
Mean Wet-bulb Temperature,	40·8°.
Mean Dew-point Temperature,	36·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·219 inch.
Mean Humidity,	75·5 per cent.
Highest Temperature in Shade (on 18th),	62·2°.
Lowest Temperature in Shade (on 15th),	31·5°.
Lowest Temperature on Grass (Radiation) (on 15th),	23·9°.
Mean Amount of Cloud,	47·8 per cent.
Rainfall (on 10 days),	1·765 inches.
Greatest Daily Rainfall (on 29th),	·435 inch.
General Directions of Wind,	N.E., W.N.W.

Remarks.

A cold, generally bright, dry month, vith high barometer and frequently a large diurnal range of temperature, amounting to 20° or upwards on five days. The precipitation was almost entirely in the form of hail or sleet, but was limited to ten days—an absolutely dry period accompanying an anticyclone from the 6th to the 20th inclusive. Electrical disturbances occurred on five days; a faint aurora was observed on one night—the 11th. With the exception of 1879, this was the coldest April experienced in Dublin since the present records were commenced in 1860.

In Dublin the mean temperature (45·1°) was decidedly below the average (48·1°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 44·3°. In the twenty-two years ending with 1886, April was coldest in 1879 (the cold year) (M. T. = 44·5°), and warmest in 1865 and 1874 (M. T. = 50·4°). In 1886, the M. T. was 46·3°.

The mean height of the barometer was 30·051 inches, or as much as 0·194 inch above the average value for April—namely, 29·857 inches. The mercury rose to 30·636 inches at 9 a.m. of the 17th, and fell to 29·081 inches at 9 a.m. of the 23rd. The observed range of atmospherical pressure was, therefore, as much as 1·555 inches—that is, a little over one inch and a half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 44·3°, or 3·8° above the value for March, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 43·9°, or 3·1° below the average mean temperature for April, calculated in the same way, in the twenty years, 1865–84, inclusive (47·0°). The arithmetical mean of the maximal and minimal readings was 45·1°, compared with a twenty years' average of 48·1°. On the 18th the thermometer in the screen rose to 62·2°—wind W.N.W.; on the 15th the temperature fell to 31·5°—wind N.W. The minimum on the grass was 23·9° on the same date. The rainfall was 1·765 inches, distributed over 10 days. The average rainfall for April in the twenty years, 1865–84, inclusive, was 2·029 inches, and the average number of rainy days was 15·0. The rainfall and the rainy days, therefore, were decidedly below the average. In 1877 the rainfall in April was very large—4·707 inches on 21 days; in 1882 also 3·526 inches fell on 20 days. On the other hand, in 1873, only ·498 of an inch was measured on 8 days, and in 1870 only ·838 of an inch fell, also on 8 days.

A lunar corona was seen on the 2nd. There was a faint aurora borealis on the 25th. The atmosphere was more or less foggy on the 10th, 11th, 12th, 29th, and 30th. High winds were noted on 7 days, but on no occasion was the force of a gale attained. Snow or sleet occurred on the 5th, 7th, 25th, 26th, and 27th—five days in all; and hail fell on ten days—viz., the 4th, 5th, 7th, 22nd, 24th, 25th, 26th, 27th, 29th, and 30th.

The month opened with northerly winds, and cool dry weather in Ireland, cold showers and squalls in Great Britain.

During the week ending Saturday, the 9th, the weather was chiefly cold and somewhat unsettled, so that falls of sleet, or snow, and hail were reported from most parts of the United Kingdom. In Dublin, a fall of cold rain on Monday, the 4th, was followed by hail showers; and at 5 p.m. next day a heavy thunder shower passed over the city from the northward, accompanied with darkness and heavy rain, hail, sleet, and snow. On Thursday, the 7th, there was a piercing E.N.E. wind, with light showers of sleet and hail.

Conditions now became anticyclonic, and remained so throughout Easter week, ending Saturday, the 16th. In Dublin the wind was almost continuously easterly or north-easterly, the air was dry and searching, and the weather was rainless, with much sunshine by day, but very low temperatures at night.

In the third week (17th to 23rd, inclusive), a gradual but decided change in the weather took place. On Sunday, the 17th, a large anticyclone lay over the greater part of western Europe, its central area—in which readings exceeded 30·7 inches—being found over the Netherlands and the S.E. of England. In Dublin the barometer read 30·636 inches at 9 a.m., and the air was singularly dry—the relative humidity at 11 a.m. falling to 48 per cent. Towards evening the barometer began to give way generally, and this change went on steadily until nearly the close of the week, when readings sank below 29 inches in the N.W. of Ireland. At first the wind backed to W. and temperature rose to 62·2° in Dublin on the 18th; afterwards clouds increased, and on the 21st showers began to fall.

The weather of the last week (24th to 30th, inclusive) was most inclement—with thunder and hail storms, as well as showers of sleet and snow. The mean temperature in Dublin was only 41·8°, or 7° below the average, and 7·7° below the mean temperature of the week ending January 29, 1887. On Friday, the 29th, a partial shower of large graupel or soft hail occurred over the southern part of the city, yielding ·184 inch of water when melted.

The month was very cold—at first dry, then showery, with thunder and hail. In Dublin, the temperature fell to or below 32° on only one day in the screen, but on twenty days on the grass. The mean minimal temperature on the grass was 31·6°, compared with 29·2° in March, 29·8° in February, and 30·8° in January.

43 5 71

EXTRA REMARKS.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of May, 1887.

Mean Height of Barometer,	30·090 inches.
Maximal Height of Barometer (on 14th, at 9 a.m.),	30·517 „
Minimal Height of Barometer (on 19th, at 11 p.m.),	29·097 „
Mean Dry-bulb Temperature,	51·7°.
Mean Wet-bulb Temperature,	47·9°.
Mean Dew-point Temperature,	44·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·290 inch.
Mean Humidity,	75·5 per cent.
Highest Temperature in Shade (on 25th),	66·6°.
Lowest Temperature in Shade (on 1st),	36·2°.
Lowest Temperature on Grass (Radiation) (on 1st),	28·6°.
Mean Amount of Cloud,	60·0 per cent.
Rainfall (on 10 days),	·882 inch.
Greatest Daily Rainfall (on 29th),	·516 inch.
General Directions of Wind,	E.N.E., N.W.

Remarks.

A generally fine, dry, but rather dull month, with high barometer and a remarkable preponderance of polar (N. to N.E. and E.) winds. As in April the precipitation was limited to ten days and was usually in the form of cold showers. On the 19th, however, a heavy downpour of rain (·516 of an inch) took place. There were no electrical disturbances in Dublin.

In Dublin the mean temperature (51·8°) was slightly below the average (52·1°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 51·7°. In the twenty-two years ending with 1886, May was coldest in in 1869 (M. T. = 48·2°), in 1885 (M. T. = 48·7°), and in 1879 (the cold year) (M. T. = 48·8°). It was warmest in 1868 (M. T. = 55·8°) and 1875 (M. T. = 54·9°). In 1886, the M. T. was 50·5°.

The mean height of the barometer was 30·090 inches, or 0·094 inch above the average value for May—namely, 29·996 inches. The mercury rose to 30·517 inches at 9 a.m. of the 14th, and fell to 29·097 inches at 11 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, as much as 1·420 inches—that is, a little less than one inch and a half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 51·7°, or 7·4° above the value for April, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 50·6°, or 0·3° below the average mean temperature for May, calculated in the same way, in the twenty years, 1865–84, inclusive (50·9°). The arithmetical mean of the maximal and minimal readings was 51·8°, compared with a twenty years' average of 52·1°. On the 25th the thermometer in the screen rose to 66·6°—wind E.N.E.; on the 1st the temperature fell to 36·2°—wind E. The minimum on the grass was 28·6° on the same date. The rainfall was only ·882 of an inch, distributed over 10 days. The average rainfall for May in the twenty years, 1865–84, inclusive, was 1·938 inches, and the average number of rainy days was 15·1. The rainfall and the rainy days, therefore, were decidedly below the average. In 1886 the rainfall in May was very large—5·472 inches on 21 days; in 1869 also 5·414 inches fell on 19 days. On the other hand, in 1871, only ·378 of an inch was measured on 9 days, and in 1876 ·798 of an inch fell on only 6 days.

A lunar corona was seen on the 7th. There were solar halos on the 5th and 7th. The atmosphere was slightly foggy on the evening of the 3rd. High winds were noted on 5 days, attaining the force of a gale on the 19th and 20th. Snow or sleet and hail occurred on the 20th and 21st. The only heavy fall of rain was on the 19th, in connection with a deep depression and severe gale.

During the week ending Saturday, the 7th, the weather was chiefly fair in Ireland and Scotland, but very unsettled over England, France, and the Netherlands. Thunderstorms occurred over France and the midland counties of England on Tuesday, the 3rd. The 2nd was a rainy day in Dublin, but otherwise the week was quite dry here.

The second week commenced with a beautiful day—bright and warm. Temperature rose to 65·9° in Dublin, 70° in London and at Cambridge, 72° at Loughborough, and 73° at Hereford. The barometer ranged very high—from 30·4 to 30·5 inches over the Bay of Biscay, France, and the S. of England and Ireland. After Tuesday, the 10th, a series of cyclonic system passed south-eastwards across Great Britain and the North Sea, causing dull, cold, showery weather, and fresh northerly winds in those regions. In Ireland conditions were quieter, and the drought continued.

The beginning of the third week (from the 15th to the 21st inclusive), was fine and mild—towards the close of the period, however, a very decided change for the worse took place, and Friday and Saturday were exceedingly cold and inclement, with squalls and heavy showers of sleet or soft hail in nearly all parts of the United Kingdom. On the afternoon of Thursday, the 19th, the barometer fell briskly in the W., and in the course of the following night the centre of a very deep atmospherical depression, with readings as low as 28·92 inches, passed eastwards across Ireland and England, occasioning gales from S.W. veering to W. or N.W. In the Irish Sea, North Wales, and Lancashire, the N.W. gale was particularly severe. Heavy rain fell in most districts as the disturbance advanced, while in its rear sharp squalls of sleet and hail or "graupel" were experienced, with local thunderstorms. During one of these hail-storms, temperature fell to 37° at Cambridge on Saturday afternoon.

In the week ending Saturday, the 28th, the weather was chiefly fine and dry, although often cloudy and dull, in Ireland and Scotland; but decidedly cold and showery, with overcast skies in England, and especially in the eastern and southern counties. Sunday afternoon proved rainy in Dublin, but afterwards the week was almost rainless except for a shower on Friday evening. In the neighbourhood of London, on the contrary, rain fell on nearly every day, but not heavily—the rainfall for the week there being ·370 of an inch on six days.

The last three days of the month were for the most part fine, but at the very close the showery weather extended to Ireland also.

In Dublin the thermometer in the screen did not fall below 36·2° (on the 1st), but on seven nights temperatures of 32° or less were recorded on the grass. The mean minimal temperature on the grass was 37·9°, compared with 31·6° in April, 29·2° in March, 29·8° in February, and 30·8° in January.

532 68.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of June, 1887.

Mean Height of Barometer,	30·214 inches.
Maximal Height of Barometer (on 29th, at 9 a.m. and 9 p.m.),	30·500 „
Minimal Height of Barometer (on 7th, at 9 a.m.),	29·789 „
Mean Dry-bulb Temperature,	62·3°.
Mean Wet-bulb Temperature,	57·3°.
Mean Dew-point Temperature,	53·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·404 inch.
Mean Humidity,	72·3 per cent.
Highest Temperature in Shade (on 17th),	78·4°.
Lowest Temperature in Shade (on 10th),	47·4°.
Lowest Temperature on Grass (Radiation) (on 10th),	40·2°.
Mean Amount of Cloud,	41·7 per cent.
Rainfall (on 5 days),	·252 inch.
Greatest Daily Rainfall (on 3rd),	·093 inch.
General Directions of Wind,	N.E., E.

Remarks.

June, 1887, will be long remembered as one of the driest and warmest months on record in Dublin. The barometer was high almost throughout the month and remarkably steady. As in May, there was a marked preponderance of polar (N.E. and E.) winds, which were, however, of little strength, and partook more of the nature of day sea-breezes than of real or very decided air-currents. There were no electrical disturbances in Dublin, and after the 7th not a drop of rain fell.

In Dublin the mean temperature (62·3°) was much above the average (57·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were also 62·3°. In the twenty-two years ending with 1886, June was coldest in 1882 (M. T. = 55·8°), and in 1879 (the cold year) (M. T. = 55·9°). It was warmest in 1865 (M. T. = 61·0°), and in 1868 (the "warm year") (M. T. = 60·5°). In 1886, the M.T. was 57·5°.

The mean height of the barometer was 30·214 inches, or as much as 0·290 inch above the average value for June—namely, 29·924 inches. The mercury marked 30·500 inches at 9 a.m. and 9 p.m. of the 29th, and fell to 29·789 inches at 9 a.m. of the 7th. The observed range of atmospherical pressure was, therefore, only ·711 inch—that is, a little less than three quarters of an inch. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 62·3°, or 10·6° above the value for May, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*— from the means of the daily maxima and minima was 60·9°, or 4·3° above the average mean temperature for June, calculated in the same way, in the twenty years, 1865–84, inclusive (56·6°). The arithmetical mean of the maximal and minimal readings was 62·3°, compared with a twenty years' average of 57·7°. On the 17th the thermometer in the screen rose to 78·4°—wind E.N.E.; on the 10th the temperature fell to 47·4°—wind N. The minimum on the grass was 40·2° on the latter date. The rainfall was only ·252 of an inch, distributed over but 5 days. The average rainfall for June in the twenty years, 1865–84, inclusive, was 1·962 inches, and the average number of rainy days was 14·7. The rainfall and the rainy days, therefore, were decidedly below the average. In 1878 the rainfall in June was very large—5·058 inches on 19 days; in 1879 also 4·046 inches fell on 24 days. On the other hand, in 1874, only ·405 of an inch was measured on 9 days, and in 1868 only ·677 of an inch fell on but 6 days.

A lunar corona was seen on the 27th, and there was a solar halo on the 5th. The atmosphere was foggy on the 4th and 18th. High winds were noted on 3 days, but did not attain the force of a gale on any occasion. Temperature reached or exceeded 70° in the screen on no fewer than 17 days.

During the first few days the weather was dull and showery in Ireland and Scotland, but very unsettled over England, France, and the Netherlands. On the morning of the 2nd a small but increasing depression travelled northeastwards across France from the Bay of Biscay to the Netherlands, where it finally filled up or dispersed on the 4th. The advance of the depression was attended by heavy rain at the English and French stations—the largest amounts in the 48 hours ending 8 a.m. of June 4th being 1·3 inches at Liverpool and Oxford, 1·2 inches at Belfort, 1·1 inches in London and at Loughborough, and 1·0 inch at Holyhead and in Paris. On the early morning of the 3rd a little snow fell at Lutterworth, in Leicestershire. Very little rain fell in Dublin during this period.

Throughout the greater part of the week ending Saturday, the 11th, cyclonic conditions held to the northward and westward of the British Islands, while the barometer was high over France. Consequently fresh S.W. or W. winds were experienced, and some rain fell in Ireland and Scotland. On Tuesday, the 7th, the wind rose to a moderate gale at some stations. Subsequently the weather became warm and settled, and not a drop of rain fell in Dublin or the vicinity.

From the 12th to the 18th inclusive, very fine, warm weather prevailed in France, England, and the East of Ireland, whereas it was less settled in the west of Ireland and in Scotland. In Dublin the heat was tempered by sea breezes during the daytime, but, notwithstanding, the thermometer in the shade rose to 78·4° on Friday, the 17th. The maximum on this day at Parsonstown was 82°. On the 18th a decided fall of temperature and local thunderstorms were reported from Scotland.

North-easterly winds and cooler weather prevailed in Great Britain and the east of Ireland in the week ending Saturday, June 25, but it remained very warm in the centre and west of Ireland—at Parsonstown the daily maxima were 82°, 72°, 72°, 79°, 83°, 82°, and 83°; those in Dublin were 75·5°, 64·6°, 67·5°, 72·8°, 74·6°, 72·7°, and 75·6°.

Sunday, the 26th, was a dull, cold day in the S.E. of England, brilliant and very warm in Ireland. On this day the thermometer did not exceed 60° in London and at Cambridge, whereas it reached 74·7° in Dublin and 85° at Parsonstown. During the following night temperature fell to 43° in London and to 36° at Cambridge; but on the 27th, with a clear sky and light S.W. winds, it rose suddenly to 82° in London and 83° at Cambridge. At the latter place, therefore, a range of 47° occurred in 12 hours. The closing days of the month were fine, quiet, and warm, with a tendency for cloud to increase. Heavy falls of rain took place in the north and west of Scandinavia, and severe thunderstorms prevailed in France (particularly in the Pyrenees), but in the British Islands the drought continued.

Luminous cirri were seen from Dublin on the northern horizon on the nights of the 24th and 28th.

In Dublin, the rainfall for the six months ending June 30 has been only 6·741 inches on 67 days, compared with an average of 12·497 inches on 96 days. Only 1·134 inches of rain were registered on 15 days in the months of May and June,

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of July, 1887.

Mean Height of Barometer, - -	30·008 inches.
Maximal Height of Barometer (on 20th, at 9 a.m.)	30·401 „
Minimal Height of Barometer (on 26th, at 9 p.m.), -	29·288 „
Mean Dry-bulb Temperature, - -	63·4°.
Mean Wet-bulb Temperature, - - -	58·1°.
Mean Dew-point Temperature, - - -	53·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·415 inch.
Mean Humidity, - - - - -	71·4 per cent.
Highest Temperature in Shade (on 7th), - -	77·0°.
Lowest Temperature in Shade (on 18th), - -	50·3°.
Lowest Temperature on Grass (Radiation) (on 18th),	42·3°.
Mean Amount of Cloud, - - - -	59·5 per cent.
Rainfall (on 13 days), - - - -	1·194 inches.
Greatest Daily Rainfall (on 3rd), - - -	·534 inch.
General Directions of Wind, - - -	S.W., W., N.W.

Remarks.

Although not so dry, or settled, or sunny as the previous month had been, July, 1887, was comparable with it in respect of warmth. Atmospherical pressure was two-tenths of an inch lower on the average than in June, and easterly air-currents gave way completely to those from westerly points of the compass—S.W., W., and N.W. Up to the 31st, only ·660 of an inch of rain fell in Dublin, but that small quantity was distributed over as many as 12 days. On the 31st a thunderstorm occurred, accompanied with very heavy rain and hail; no other electrical disturbances were experienced in the city or its vicinity.

In Dublin the mean temperature (63·7°) was much above the average (60·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 63·4°. In the twenty-two years ending with 1886, July was coldest in 1879 (the cold year) (M. T. = 57·2°). It was warmest in 1868 (the "warm year") (M. T. = 63·5°). In 1886, the M. T. was 61·0°. From this, July, 1887, proves to have been the warmest since the present records commenced.

The mean height of the barometer was 30·008 inches, or 0·086 inch above the average value for July—namely, 29·922 inches. The mercury marked 30·401 inches at 9 a.m. of the 20th, and fell to 29·288 inches at 9 p.m. of the 26th. The observed range of atmospherical pressure was, therefore, 1·113 inches—that is, a little more than an inch and one-tenth. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 63·4°, or 1·1° above the value for June, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 62·4°, or 2·8° above the average mean temperature for July, calculated in the same way, in the twenty years, 1865–84, inclusive (59·6°). The arithmetical mean of the maximal and minimal readings was 63·7°, compared with a twenty years' average of 60·7°. On the 7th the thermometer in the screen rose to 77·0°—wind S.W.; on the 18th the temperature fell to 50·3°—wind N.N.W. The minimum on the grass was 42·3° on the latter date. The rainfall was only 1·194 inches, distributed over 13 days. The average rainfall for July in the twenty years, 1865–84, inclusive, was 2·499 inches, and the average number of rainy days was 17·6. The rainfall and the rainy days, therefore, were again decidedly below the average. In 1880 the rainfall in July was very large—6·087 inches on 24 days; in 1871 also 4·391 inches fell on 28 days. On the other hand, in 1870, only ·539 of an inch was measured on 8 days, in 1869 the fall was only ·739 of an inch on 9 days, and in 1868 only ·741 of an inch fell on but 5 days.

Solar halos appeared on the 14th and 24th. High winds were noted on as many as 14 days, but attained the force of a gale on only one occasion—viz., the 27th. Temperature reached or exceeded 70° in the screen on no fewer than 17 days. There was a storm of thunder, lightning, and heavy hail and rain on the 31st.

The first two days were quiet, warm, and summerlike. Temperature rose to 86° in the screen at Cambridge on Saturday, the 2nd.

During the week from the 3rd to the 9th inclusive there was a gradually increasing tendency to the breaking up of the long period of fine, dry weather which had been experienced in the British Islands and Western Europe generally. The distribution of pressure became cyclonic, and fresh to strong southerly and westerly winds set in, with showery weather, particularly in the W. of Ireland and Scotland.

These changes became stereotyped in the week ending Saturday, the 16th; and rain fell in varying amounts over the whole of the United Kingdom. Throughout the greater part of the period the type of pressure distribution was south-westerly—the barometer being highest over France or Spain, but relatively high over Central Europe and the Baltic. On Wednesday, the 13th, temperature rose to 85° at Cambridge, but the highest reading of the week in Dublin was 73·9°.

The weather experienced in the week ending the 23rd was fine, and, on the whole, very dry over the British Isles, but dull and very rainy over Scandinavia and the southern half of France—in the latter region thunderstorms were of daily occurrence. At the close of the week, showers fell in and about Dublin.

In the period ending Saturday, the 30th, the weather was decidedly broken, and several rather deep cyclonic systems passed by the N.W. of Ireland and W. of Scotland. One of these disturbances brought a S. to W. gale to the Irish and Scotch coasts on the 26th and 27th, and at exposed stations a considerable quantity of rain fell. The wind moderated on the afternoon of the 29th. On the 30th rain fell heavily at Parsonstown, King's County (·420 inch), and at Greystones, Co. Wicklow (·428 inch). There was no measurable rainfall in Dublin on this day, but on the 31st ·534 inch was measured as the result of a thunderstorm accompanied with drenching showers of rain and large hail. The electrical disturbances of the 31st extended all along the east coast of Ireland and the corresponding coast of England, and were connected with local easterly sea-breezes, coming inland in the face of a prevailing westerly air-current.

The rainfall of the month at Greystones, Co. Wicklow, was 1·730 inches, on 9 days.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of August, 1887.

Mean Height of Barometer,	29·956 inches.
Maximal Height of Barometer (on 2nd, at 9 p.m.)	30·382 „
Minimal Height of Barometer (on 30th, at 9 p.m.),	29·295 „
Mean Dry-bulb Temperature,	59·7°.
Mean Wet-bulb Temperature,	55·7°.
Mean Dew-point Temperature,	52·1°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·391 inch.
Mean Humidity,	76·4 per cent.
Highest Temperature in Shade (on 8th),	78·9°.
Lowest Temperature in Shade (on 14th),	42·3°.
Lowest Temperature on Grass (Radiation) (on 14th),	38·3°.
Mean Amount of Cloud,	51·5 per cent.
Rainfall (on 16 days),	1·520 inches.
Greatest Daily Rainfall (on 17th),	·350 inch.
General Directions of Wind,	N., S., N.W.

Remarks.

The change towards less settled weather noticed in July continued through August, which proved to be rather cool, very breezy, and showery. At first, indeed, conditions were settled and the weather was dry and warm, but after the 11th rain fell in larger or smaller quantity on 14 days, and high winds from opposite quarters—chiefly from N. or S.—prevailed. In the middle of the month violent electrical disturbances occurred—particularly in England.

In Dublin the mean temperature (60·3°) was slightly above the average (59·9°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 59·7°. In the twenty-two years ending with 1886, August was coldest in 1881 (M. T. = 57·0°) and warmest in 1871 (M. T. = 62·0°). In 1885, the M. T. was only 57·1°; in the year 1879 (the cold year) it was 57·7°.

The mean height of the barometer was 29·956 inches, or 0·052 inch above the average value for August—namely, 29·904 inches. The mercury marked 30·382 inches at 9 p.m. of the 2nd, and fell to 29·295 inches at 9 p.m. of the 30th. The observed range of atmospherical pressure was, therefore, 1·087 inches—that is, a little less than an inch and one-tenth. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 59·7°, or 3·7° below the value for July, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 59·0°, or 0·1° above the average mean temperature for August, calculated in the same way, in the twenty years, 1865–84, inclusive (58·9°). The arithmetical mean of the maximal and minimal readings was 60·3°, compared with a twenty years' average of 59·9°. On the 8th the thermometer in the screen rose to 78·9°—wind W.; on the 14th the temperature fell to 42·3°—wind N. The minimum on the grass was 38·3° on the latter date. The rainfall was 1·520 inches, distributed over 16 days. The average rainfall for August in the twenty years, 1865–84, inclusive, was 2·877 inches, and the average number of rainy days was 15·5. The rainfall ~~and the rainy days,~~ therefore, ~~were~~ was again below the average, whereas the rainy days were about equal to it. In 1874 the rainfall in August was very large—4·946 inches on 18 days—and in 1868, 4·745 inches fell on only 13 days. On the other hand, in 1884, only ·777 inch was measured on 8 days.

Solar halos appeared on the 4th, 15th and 16th. High winds were noted on as many as 9 days, but did not attain the force of a gale on any one occasion. The atmosphere was foggy on the 3rd. Thunder was heard on the 17th; lightning was seen on the 16th, 17th and 19th. Hail fell in heavy showers on the 17th and 19th. Temperature reached or exceeded 70° in the screen on 10 days—or 7 fewer than in July.

During the week ending Saturday, 6th, an anticyclone, or area of high atmospherical pressure, passed slowly eastwards across the British Islands. The winds were at first north-westerly, and the weather was chiefly fine and dry, except in the far North. On Wednesday, the 3rd, the centre of the system lay completely over the United Kingdom, and the weather improved still further, with a rise of temperature as the southerly winds on the western side of the anticyclone spread over the country. On Friday, the 5th, a depression appeared off the N.W. of Ireland, where cloud increased and a heavy rainfall at last set in, amounting to 2 inches at Belmullet. In Dublin the sky looked very unsettled on the morning of the 6th, but only a shower fell, and the evening proved brilliant.

The earlier part of the second week (7th–13th inclusive), was characterised by very fine warm weather, except in the extreme N. and N.W., where showers and squalls prevailed. Towards the close of the period, however, a change took place, and on Friday or Saturday rain was experienced in most parts of the kingdom. At the beginning of the week, the barometer stood high in the S. of Ireland and of England, while depressions travelled eastward across Scotland, the North Sea, and Scandinavia. The prevailing winds were therefore W. to N.W., and they blew strongly in the N., lightly in the S. Monday, the 8th, was the hottest day of the summer in Dublin—the thermometer rising to 78·9° in the screen. On this day it rose to 85° in London and at Cambridge. The air also was very dry in Dublin, the relative humidity at 5 10 p.m. was only 30 per cent. On the 9th, the wind veered towards N., and a great reduction of temperature occurred. This culminated on the 14th, when even in Dublin the thermometer in the screen sank to 42·3°. The cold weather was at first unaccompanied by rain, but on Friday and Saturday, the 12th and 13th, showers fell at frequent intervals.

In the course of the week ending Saturday, the 20th, the weather over Western Europe fell into a very unsettled state. Temperature was low for the time of year. Rain fell generally, and in some places heavily, while thunderstorms of unusual severity occurred over England. The thunderstorm depressions of this period passed with their centres across England in an easterly or north-easterly direction. In Ireland, therefore, the wind was chiefly N. or N.E. Heavy thunder and hail showers occurred in Dublin and its vicinity on the 17th and 19th. On the evening of the former day an exceptionally violent thunderstorm passed over London—at Brixton the accompanying rainfall amounted to 2 inches.

During the greater part of the fourth week (21st–27th), fair dry weather prevailed in Great Britain, but in Ireland it was showery or rainy, with warm and squally S. or S.W. winds. Temperature was rather low at the beginning of this period, but afterwards rose steadily. On Thursday and Friday, the 25th and 26th, maxima exceeding 80° were recorded in many parts of Great Britain. The highest temperature on the 25th in Dublin was 73·7°.

The last few days of the month were unsettled generally, showers and local thunderstorms being reported from all districts. On the 30th and 31st, moderate to fresh gales from S.W. occurred in the Irish Sea, the Bristol and English Channels.

The close of August witnessed the termination of the protracted drought for which the spring and summer of 1887 will long be memorable. From January 1st, up to and including August 31st, rain fell in Dublin to the amount of only 9·455 inches on but 96 days.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of September, 1887.

Mean Height of Barometer,	29·936 inches.
Maximal Height of Barometer (on 19th, at 9 a.m.)	30·604 „
Minimal Height of Barometer (on 1st, at 9 p.m.)	29·066 „
Mean Dry-bulb Temperature,	53·1°.
Mean Wet-bulb Temperature,	50·8°.
Mean Dew-point Temperature	48·5°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·343 inch.
Mean Humidity,	84·6 per cent.
Highest Temperature in Shade (on 9th),	67·4°.
Lowest Temperature in Shade (on 29th),	37·9°.
Lowest Temperature on Grass (Radiation) (on 29th),	30·8°.
Mean Amount of Cloud,	70·7 per cent.
Rainfall (on 16 days),	1·513 inches.
Greatest Daily Rainfall (on 1st),	·482 inch.
General Directions of Wind,	N.W., W., N.

Remarks.

Opening with very unsettled, squally and showery weather, September, 1887, nevertheless proved a favourable month. It was no doubt very cool, but from the 11th to the 25th conditions were usually anticyclonic, and the weather was quiet and dry. A remarkable reduction of atmospherical pressure took place over the greater part of Europe on the 25th and 26th, so that the weather again became changeable and showery, with very low temperatures, and some severe thunderstorms. On the night of Wednesday, the 28th, a thunderstorm of exceptional violence raged along the coast of the Counties of Dublin and Wicklow.

In Dublin the mean temperature (54·0°) was decidedly below the average (56·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 53·1°. In the twenty-two years ending with 1886, September was coldest in 1866 and in 1882 (M. T. = 53·0°) and warmest in 1865 (M. T. = 61·4°). In 1880, the M. T. was as high as 58·6°; in the year 1879 (the cold year) it was 54·3°.

The mean height of the barometer was 29·936 inches, or 0·019 inch above the average value for September—namely, 29·917 inches. The mercury marked 30·604 inches at 9 a.m. of the 19th, and fell to 29·066 inches at 9 p.m. of the 1st. The observed range of atmospherical pressure was, therefore, 1·538 inches—that is, a little more than an inch and one-half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 53·1°, or 6·6° below the value for August, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 52·8°, or 2·3° below the average mean temperature for September, calculated in the same way, in the twenty years, 1865–84, inclusive (55·1°). The arithmetical mean of the maximal and minimal readings was 54·0°, compared with a twenty years' average of 56·0°. On the 9th the thermometer in the screen rose to 67·4°—wind S.W.; on the 29th the temperature fell to 37·9°—wind N.W. The minimum on the grass was 30·8° on the latter date. The rainfall was 1·513 inches, distributed over 16 days; both rainfall and rainy days were nearly identical with the values for the preceding month of August—viz., 1·520 inches on 16 days. The average rainfall for September in the twenty years, 1865–84, inclusive, was 2·289 inches, and the average number of rainy days was 14·5. The rainfall, therefore, was again below the average, whereas the rainy days were perceptibly above it. In 1871 the rainfall in September was very large—4·048 inches on, however, only 13 days. On the other hand, in 1865, only ·056 inch was measured on but 3 days.

Solar halos appeared on the 28th. High winds were noted on as many as 8 days, but attained the force of a gale on only two occasions, the 1st and the 5th. The atmosphere was foggy on the 3rd, 21st, 23rd, and 24th. Thunder was heard and much lightning was seen on the night of the 28th, when a violent storm passed along the east coast over the sea from N.N.E. to S.S.W. ~~Hail fell in heavy showers on the 17th and 19th.~~ Temperature did not reach 70° in the screen on any day, while it fell below 40° on 2 days.

At 8 52 p.m. of Tuesday, the 13th, a brilliant meteor was seen traversing the sky from the vicinity of the Pointers in a direction towards S.S.E. The noise of its explosion was heard 3½ minutes later, so that the meteorite burst into flames as a result of its collision with the earth's atmosphere at a distance of 43·4 miles from the observer.

On the 1st of the month (Thursday) the centre of a very deep atmospherical depression travelled quickly towards E.N.E. across the South of Ireland and the Irish Sea. At 8 a.m. of the 2nd, the centre was near Manchester, where the barometer was below 28·90 inches. Severe gales and heavy rains were reported from nearly all parts of the United Kingdom. During Friday this depression gradually filled up, and finally disappeared off the West Coast of Norway in the course of Saturday, the 3rd.

During the week ending on the 10th, the weather over our Islands and their neighbourhood remained in a very unsettled state, with rain in all districts, and a somewhat low temperature. Conditions were cyclonic, except on Wednesday and Thursday, the 7th and 8th, when an anticyclone was passing quickly eastwards over the southern portion of the United Kingdom. On these days bright pleasant weather was experienced in the east of Ireland and other districts for some hours. This agreeable change was soon followed by a return of squalls and showers, as a new depression passed north-eastwards along the north-west coasts of Ireland and Scotland.

The weather remained unsettled in the period from the 11th to the 17th inclusive, but more particularly so in Great Britain than in Ireland. This was brought about by the anomalous transit across the North Sea of a series of shallow depressions in a westerly direction—that is, from Denmark to the North of England and Scotland. Cold northerly winds and daily falls of rain occurred in Great Britain; but in Ireland, which was further away from the centres of disturbance, the weather, although dull, was finer. Thus, in Dublin the rainfall of this week was only ·020 inch, whereas at Shields 1·590 inches of rain were measured.

Throughout the week ending on the 24th, the distribution of pressure over the British Islands was anticyclonic, and the type of gradient northerly, so that northerly (N.W. to N.E.) breezes were prevalent—light in force over Scotland and Ireland, moderate to fresh in the S. and E. of England. The weather was generally dry in the United Kingdom, but more or less showery to the eastward of the North Sea. Considerable amounts of cloud and haze were observed inland, while the sky was comparatively clear at the coast stations.

At the beginning of the last week conditions became very unsettled, and so continued to the end of the month. On Sunday, the 25th, the barometer gave way generally and rapidly, and this change went on until Wednesday, the 28th, when a large and irregular depression was found over Scotland, the North of Ireland, and the North and East of England. Temperature now became very low—at 8 a.m. the thermometer stood at 33° at Loughborough. At night a very severe storm of thunder and lightning passed southwards along the coast of Dublin and Wicklow—the lightning being extremely frequent and vivid, and the thunder alarmingly loud. Some heavy showers of rain and hail fell locally during the storm. With the setting in of a fresh N.E. wind on the 29th, temperature rose—first in the North and afterwards all over the country.

From January 1st up to and including September 30th rain fell in Dublin to the amount of only 10·968 inches on but 112 days—the average for the nine months based on twenty years observation being 20·162 inches, and 143·6 rainy days. Thus, the rainfall was equal to only 54·4 per cent. of the average, while the rainy days were equal to 78 per cent. of the average.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of October, 1887.

Mean Height of Barometer,	30·144 inches.
Maximal Height of Barometer (on 25th, at 9 a.m.)	30·681 „
Minimal Height of Barometer (on 30th, at 9 a.m.)	29·315 „
Mean Dry-bulb Temperature,	46·5°.
Mean Wet-bulb Temperature,	43·9°.
Mean Dew-point Temperature	41·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·259 inch.
Mean Humidity,	81·7 per cent.
Highest Temperature in Shade (on 27th),	59·7°.
Lowest Temperature in Shade (on 11th),	33·4°.
Lowest Temperature on Grass (Radiation) (on 26th),	25·7°.
Mean Amount of Cloud,	65·8 per cent.
Rainfall (on 11 days),	1·398 inches.
Greatest Daily Rainfall (on 31st),	·629 inch.
General Directions of Wind,	N., N.W., W., S.W.

Remarks.

This was for the most part and until the close a quiet, dull, cold month, with high atmospherical pressure and scanty rainfall. There was a broken period from the 7th to the 12th. On the morning of the latter day the first snow of the season fell. After the 25th again, the weather fell into an unsettled showery state, and on the night of the 31st a deep depression, advancing from the south-westward, brought a violent southerly gale and much rain. A curious fact about the anti-cyclones of October, 1887, was the comparatively high rate of speed which they attained in passing eastwards across the United Kingdom and France.

In Dublin the mean temperature (47·3°) was—as in September—decidedly below the average (50·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 46·50°. In the twenty-two years ending with 1886, October was coldest in 1880 (M. T. = 45·4°) and in 1885 (M. T. = 45·5°), and warmest in 1876 (M. T. = 53·1°). In 1886, the M. T. was as high as 52·0°; in the year 1879 (the cold year) it was 49·7°.

The mean height of the barometer was 30·144 inches, or 0·297 inch above the average value for October—namely, 29·847 inches. The mercury marked 30·681 inches at 9 a.m. of the 25th, and fell to 29·315 inches at 9 a.m. of the 30th. The observed range of atmospherical pressure was, therefore, 1·366 inches—that is, a little less than an inch and four-tenths. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 46·5°, or 6·6° below the value for September, and 13·2° below that for August, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was also 46·5°, or 2·7° below the average mean temperature for October, calculated in the same way, in the twenty years, 1865–84, inclusive (49·2°). The arithmetical mean of the maximal and minimal readings was 47·3°, compared with a twenty years' average of 50·0°. On the 27th the thermometer in the screen rose to 59·7°—wind S.W.; on the 11th the temperature fell to 33·4°—wind N.N.W. The minimum on the grass was 25·7° on the 26th. The rainfall was 1·398 inches, distributed over 11 days; both rainfall and rainy days were perceptibly less than the values for the preceding month of September—viz., 1·513 inches on 16 days. The average rainfall for October in the twenty years, 1865–84, inclusive, was 3·025 inches, and the average number of rainy days was 17·2. The rainfall, therefore, was again much below the average, and the rainy days were below it. In 1880 the rainfall in October was very large—7·358 inches on 20 days. In 1875, also, 7·049 inches fell on 26 days. On the other hand, in 1884, only ·834 inch was measured on but 14 days, and in 1868 only ·856 inch on 15 days.

Solar halos appeared on the 20th and 29th. A lunar corona was seen on the 30th. High winds were noted on 7 days, and attained the force of a gale on three occasions, the 26th, 30th, and 31st. The atmosphere was not once foggy in Dublin. Lightning was seen on the night of the 10th, when thunder-showers passed along the east coast over the sea from N.N.W. to S.S.E. Hail fell with heavy showers of rain on the evening of the 9th, and snow on the morning of the 12th. Temperature did not reach 60° in the screen on any day, while it fell below 40° on 12 days.

Saturday, the 1st, was a fine mild, but rather cloudy day. It was followed by a succession of quiet cloudy days, during which the centre of an anticyclone lay over Ireland or off its western coasts, while a series of atmospherical depressions passed eastwards or south-eastwards across Scandinavia and Russia. On the night of Thursday, the 6th, a small and shallow depression was formed over the West of Scotland, whence it travelled towards S.S.E., reaching the Midland Counties of England by the evening of Saturday, the 8th, when it dispersed. This disturbance caused cold showers in Ireland and northerly winds.

The weather of the week ending Saturday, the 15th, was cold and unseasonable. Night frosts were frequent, more particularly at the inland stations, while showers of cold rain, sleet, hail and snow occurred in all districts, accompanied by thunder and lightning in many places. On Sunday, the 9th, the rainfall at Greystones, Co. Wicklow, reached the amount of ·74 of an inch, but in Dublin only ·122 of an inch fell. The wind was mainly N. during this period, and at times it blew hard on exposed parts of the coast. The showers on the 9th were connected with the advance of a deep depression from the Iberian Peninsula across France to the S.E. of England and the North Sea. On the early morning of the 12th a subsidiary disturbance moved southwards down the Irish Sea, causing strong N. winds, and falls of snow and sleet. On Saturday, the 15th, the weather improved, as an area of high barometer came in over Ireland from the Atlantic.

During the third week (16th–22nd inclusive) the weather in Ireland and the South of England was fair, dry and quiet; in Scotland and Norway it was less settled, with occasional strong W. winds. In the course of the week two well-defined anticyclones passed eastwards across the British Islands, and the first in the period between Sunday and Wednesday, the second on Friday and Saturday. In both instances, sharp cold and local fogs occurred at night within the central area of the high pressure system. In Dublin the weather of this week was mild and equable, with clouded skies and light winds. The mear temperature rose to 48·3° from 40·8° in the week ending the 15th.

From the 23rd to the 29th inclusive very changeable weather prevailed—at times it was cold and quiet, at others it was rough, wild and rainy. On Tuesday, the 25th, an area of high pressure, in which the barometer reached 30·70 inches, advanced over Ireland, in the centre of which country the cold became very severe—at 8 a.m. temperature was 25° at Parsonstown. Next day a mild S.W. air-current flowed over Ireland, as the anticyclone moved south-eastwards to England on its journey to France and Germany. At 8 a.m. of the 26th the thermometer marked 47° at Parsonstown—a rise of 22°, but was down to 28° in London. It had been as low as 23° during the previous night at Loughborough, in Leicestershire. In the course of the day heavy rain set in over the S. and W. of Ireland, the downpour yielding 2·3 inches at Valentia Island, 1·15 inches at Parsonstown, but only ·330 inch in the city of Dublin. Frost prevailed on this and the two following days in France and Germany. On the evening of Saturday, the 29th, cirro-stratus overspread the sky in front of a deep depression, which subsequently travelled towards E.N.E. across the south of England, causing heavy gales in the English Channel, and a downpour of rain over the greater part of England.

The last two days were squally and showery, and at the close of the month a very deep cyclonic system was advancing from S.W., accompanied by torrents of rain and violent gales.

From January 1st up to and including October 31st rain fell in Dublin to the amount of only 12·366 inches on but 123 days—the average for the ten months based on twenty years' observations being 23·187 inches, and 160·8 rainy days. Thus, the rainfall was equal to only 53·3 per cent. of the average, while the rainy days were equal to 76·5 per cent. of the average.

At Greystones, Co. Wicklow, the rainfall in October amounted to 2·24 inches, distributed over only 9 days.

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of November, 1887.

Mean Height of Barometer,	29·679 inches.
Maximal Height of Barometer (on 15th, at 9 p.m.)	30·360 „
Minimal Height of Barometer (on 1st, at 9 a.m.)	28·538 „
Mean Dry-bulb Temperature,	42·1°.
Mean Wet-bulb Temperature,	40·5°.
Mean Dew-point Temperature	38·4°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·235 inch.
Mean Humidity,	87·5 per cent.
Highest Temperature in Shade (on 26th),	55·4°.
Lowest Temperature in Shade (on 24th),	28·0°.
Lowest Temperature on Grass (Radiation) (on 24th),	20·0°.
Mean Amount of Cloud,	63·2 per cent.
Rainfall (on 18 days),	3·012 inches.
Greatest Daily Rainfall (on 5th),	·870 inch.
General Directions of Wind,	S.W., W., N.W.

Remarks.

November differed from all the previous months of 1887 in the fact that its rainfall was decidedly in excess of the average. This, however, was due to an exceptionally heavy downpour of ·870 inch on the 5th—a measurement which is unusual for November, in which rain falls frequently rather than heavily. The month was cold and very unsettled, damp, and dull. Fog was very prevalent in the third week. The barometer was extremely low at the commencement, and remained unsteady throughout. Temperature also varied remarkably and quickly—the highest and lowest readings of the thermometer being recorded within a period of some 48 hours between the 24th and 26th. The prevailing winds were westerly (S.W. to N.W.), but in the second week a *warm* easterly breeze was experienced.

In Dublin the mean temperature (42·6°) was—as in October and September—decidedly below the average (44·4°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 42·1°. In the twenty-two years ending with 1886, November was coldest in 1878 (M. T. = 38·2°) and in 1870 (M. T. = 42·2°), and warmest in 1881 (M. T. = 50·3°). In 1886, the M. T. was as high as 46·4°; in the year 1879 (the cold year) it was 43·9°.

The mean height of the barometer was 29·679 inches, or 0·188 inch below the average value for November—namely, 29·867 inches, and 0·465 inch below the mean value for October, 1887, viz., 30·144 inches. The mercury marked 30·360 inches at 9 p.m. of the 15th, and fell to 28·538 inches at 9 a.m. of the 1st. The observed range of atmospherical pressure was, therefore, 1·822 inches—that is, a little more than an inch and eight-tenths. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 42·1°, or 4·4° below the value for October, and 11·0° below that for September, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* − *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 41·8°, or 1·9° below the average mean temperature for November, calculated in the same way, in the twenty years, 1865–84, inclusive (43·7°). The arithmetical mean of the maximal and minimal readings was 42·6°, compared with a twenty years' average of 44·4°. On the 26th the thermometer in the screen rose to 55·4°—wind S.W.; on the 24th the temperature fell to 28·0°—wind calm. The minimum on the grass was 20·0° on the 24th. The rainfall was 3·012 inches, distributed over 18 days; both rainfall and rainy days were perceptibly more than the values for the preceding month of October—viz., 1·398 inches on 11 days. The average rainfall for November in the twenty years, 1865–84, inclusive, was 2·312 inches, and the average number of rainy days was 16·8. The rainfall, therefore, was decidedly above the average and the rainy days were slightly above it. In 1876 the rainfall in November was large—3·614 inches on 20 days. In 1872, also, 3·414 inches fell on 24 days. On the other hand, in 1870 only 1·218 inches were measured on but 11 days, and in 1879 only 1·251 inches on but 10 days.

A solar halo appeared on the 17th. A lunar corona was seen on the 29th. High winds were noted on 10 days, and attained the force of a gale on three occasions, the 1st, 26th, and 27th. The atmosphere was more or less foggy on nine occasions in Dublin, particularly on the evening of the 20th, when a dense vapour fog, and severe cold prevailed. Hail fell on the 11th, 14th, 15th, and 19th. Temperature exceeded 50° in the screen on seven days, while it fell below 30° on 3 days.

The weather of the week ending Saturday, the 5th, was very stormy, with heavy rain in most districts of the United Kingdom. In Dublin this was the stormiest and rainiest week of 1887. The mean height of the barometer was only 29·036 inches, and at 9 a.m. of Tuesday, the 1st, the reading was as low as 28·538 inches. The total precipitation for the week amounted to 2·016 inches, or almost one-sixth of the rainfall of the first ten months of 1887—namely, 12·366 inches. Of this quantity ·629 inch fell on Monday, October 31, and ·870 inch on Saturday, November 5. During the greater portion of this stormy, unsettled period, the barometer was relatively high both in Spain and over Northern Russia, while, in addition to numerous secondary disturbances, four important atmospherical depressions appeared in the neighbourhood of our islands. Temperature was about the average, and no extremes of either heat or cold were recorded.

In the second week (6th–12th, inclusive) the weather was again excessively dull and rainy—although the downpour was neither as heavy nor as continuous as in the previous week. The prevailing wind was E.N.E., and temperature was uniform and rather high for the time of year, owing chiefly to the clouded state of the sky, by which radiation was checked. The mean temperature (46·3°) was 5·5° above that of the week ending October 15 (40·8°). The extreme mildness and dampness of the easterly winds during this period attracted general attention—the mean values both of temperature and of rainfall having been considerably above the average, not only at the British and Irish stations, but on the shores of the North Sea also. In the earlier part a depression recurved on reaching Havre, and after travelling in a westerly and south-westerly direction moved out to the Atlantic over the Bay of Biscay.

From the 13th to the 19th, inclusive, the weather was very cold throughout—the mean temperature (37·3°) was 9° below that of the preceding week, and 7·1° below the average for November. The barometer fell from 30·360 inches at 9 p.m. of Tuesday to 29·228 inches at 9 a.m. of Saturday. Hail was observed on Monday, Tuesday, and Saturday. Rain fell on two days to the amount of ·323 inch. Fog was frequently observed at the English stations, where also hard frosts were experienced on the nights of Tuesday and Wednesday, the 15th and 16th, the lowest readings in the screen being 16° at Llandovery, 17° at Rothamsted, 19° at Oxford, and 20° at Loughborough. Snow and sleet fell in the S.E. of England on the 18th.

During the week ended Saturday, the 26th, the weather was changeable, chiefly cold, and at times rainy. The contrast between Sunday and Saturday as regards temperature was remarkable—the former day was piercingly cold, with dense fog towards evening, the mean temperature being only 31·6°; the latter day was mild and squally, the mean temperature 51·3°, or nearly 20° above that of Sunday. Rain fell on five days to the total amount of ·541 inch, the maximal fall being ·240 inch on Saturday. Over the whole country the weather of this period was singularly changeable and unstable—at times cold and anticyclonic, with light varying winds, frost and fog; at other times very warm and showery, with southerly to westerly gales and unusual "visibility." On the 26th fresh to strong gales occurred in many parts of the country, and temperature was very high for the time of year.

The last four days were chiefly fine in Dublin, but on the night of the 28th, a well-defined subsidiary depression passed across the S.E. of England, causing heavy rains in the English Channel and the south and east of that country. As the month closed, temperature rose in Ireland, with a damp, murky atmosphere.

From January 1st up to and including November 30th, rain fell in Dublin to the amount of only 15·378 inches on but 141 days—the average for the ten months based on twenty years' observations being 25·499 inches, and 177·6 rainy days. Thus, the rainfall was equal to only 60·3 per cent. of the average, while the rainy days were equal to 79·4 per cent. of the average.

At Greystones, Co. Wicklow, the rainfall in November amounted to 3·42 inches, distributed over 17 days.

3.486

EXTRA REMARKS.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of December, 1887.

Mean Height of Barometer,	29·833 inches.
Maximal Height of Barometer (on 2nd, at 9 a.m.)	30·382 „
Minimal Height of Barometer (on 14th, at 9 p.m.)	28·991 „
Mean Dry-bulb Temperature,	39·5°.
Mean Wet-bulb Temperature	37·8°.
Mean Dew-point Temperature	35·5°.
Mean Elastic Force (Tension of Aqueous Vapour,	·210 inch.
Mean Humidity,	86·1 per cent.
Highest Temperature in Shade (on 3rd),	55·1°.
Lowest Temperature in Shade (on 22nd),	25·1°.
Lowest Temperature on Grass (Radiation) (on 22nd),	18·0°.
Mean Amount of Cloud,	59·1 per cent.
Rainfall (on 19 days),	1·223 inches.
Greatest Daily Rainfall (on 15th),	·240 inch.
General Directions of Wind,	W., N.W.

Remarks.

December was damp and chilly, with a rainfall much below the average in amount, but distributed over as many as 19 days. In the earlier part, both atmospherical pressure and temperature were very unsteady. After the 16th, the thermometer remained constantly low, never rising above 44·3° in the screen, and falling on the 22nd to 25·1° in the screen and to 18·0° on the grass. During this cold period the sky was sometimes densely overcast—indeed, after the 27th the sun was scarcely seen.

In Dublin the mean temperature (39·9°) was—as in November, October, and September—decidedly below the average (41·3°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 39·5°. In the twenty-two years ending with 1886, December was coldest in 1878 (M. T. = 32·8°) and in 1874 (M. T. = 36·8°), and warmest in 1865 (M. T. = 46·2°). In 1886, the M. T. was as low as 37·9°; in the year 1879 (the cold year) it was also 37·9°.

The mean height of the barometer was 29·833 inches, or 0·049 inch below the average value for December—namely, 29·882 inches. The mercury rose to 30·382 inches at 9 a.m. of the 2nd, and fell to 28·991 inches at 9 p.m. of the 14th. The observed range of atmospherical pressure was, therefore, 1·391 inches—that is, a little less than an inch and four-tenths. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 39·5°, or 2·6° below the value for November, and 7·0° below that for October, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.*—*min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 39·1°, or 1·4° below the average mean temperature for December, calculated in the same way, in the twenty years, 1865–84, inclusive (40·5°). The arithmetical mean of the maximal and minimal readings was 39·9°, compared with a twenty years' average of 41·3°. On the 3rd the thermometer in the screen rose to 55·1°—wind S.W.; on the 22nd the temperature fell to 25·1°—wind W. The minimum on the grass was 18·0° on the 22nd. The rainfall was 1·223 inches, distributed over 19 days. The average rainfall for December in the twenty years, 1865–84, inclusive, was 2·516 inches, and the average number of rainy days was 17·0. The rainfall, therefore, was decidedly below the average, while the rainy days were above it. In 1876 the rainfall in December was very large—7·566 inches on 22 days; in 1872, 4·932 inches fell on as many as 24 days; and in 1868 (which was otherwise a fine and dry year), 4,749 inches fell on as many as 27 days. On the other hand, in 1867, only ·771 of an inch was measured on 13 days; and in 1871, the December rainfall was only ·797 of an inch on 15 days. In 1885, only ·742 of an inch of rain was measured on but 10 days, but in 1886 the rainfall was 3·348 inches, distributed over as many as 21 days.

Solar halos appeared on the 4th and 5th. Distant thunder was heard at 11 50 a.m. of the 18th. There was a faint aurora borealis on the night of the 16th. Hail fell on the 17th, 20th, and 27th, snow or sleet on the 6th, 7th, 18th, 20th, 22nd, and 27th. The atmosphere was more or less foggy on the 10th, 11th, 22nd, 26th, 28th, 29th, and 31st—that is, on seven days. Temperature exceeded 50° in the screen on 7 days, compared with 7 in November, while it fell to or below 32° on 7 days, compared with 4 days in November. The minima on the grass were 32° or less, on 25 nights. There were gales on two days.

At the beginning of the month the weather was determined by very extensive and deep depressions over the Norwegian Sea, to the north of Scotland and west of Norway. Strong westerly winds and unsettled showery weather prevailed in the far north, while it was mild and breezy in Ireland.

During the week ending Saturday, the 10th, the weather remained changeable but free from features of an extreme character, except as regards temperature, which was occasionally very high for the time of year. Atmospherical pressure was very unsteady, and the weather, in consequence, was unsettled, rainy and squally at times. The barometer was throughout low in the far north, high over Spain and the south of France. Temperature became very high on Thursday, the 8th, when a maximum of 53·7° was recorded in Dublin, the minimum having been 32·3° on the previous day. The mean height of the barometer was 29·643 inches, the extremes were—highest, 29·978 inches at 9 p.m. of Sunday; lowest, 29·171 inches at 9 a.m. of Tuesday. Rain fell on seven days to the amount of ·432 inch—the maximal fall in 24 hours having been ·215 inch on Monday, On Tuesday and Wednesday there were showers of sleet and snow.

The week ending on the 17th was rough and wet, and although temperature was, as a rule, considerably above the average, the changes from excessive mildness to relative cold were somewhat frequent and sudden. The weather remained in a most unsettled condition throughout the week, owing to the passage of a series of deep depressions across the British Islands from S.W. to N.E. Temperature was very unsteady—in Dublin the mean was 41·4°, and the extremes were—highest, 52·6 on Tuesday; lowest, 28·1° on Monday. The mean height of the barometer was only 29·492 inches, the highest reading being 30·090 inches at 9 p.m. of Sunday, the lowest, 28·991 inches, at 9 p.m. of Wednesday. Rain fell to the amount of ·477 inch, on six days—the maximal fall in 24 hours being ·240 inch on Thursday. Hail was observed on Saturday.

In the period from the 18th to the 24th, inclusive, the weather was of two distinct types. In the earlier part, the distribution of pressure was cyclonic, and the gradients (which were somewhat steep) were favourable for W. and N. W. winds. In the latter part, the distribution of pressure became largely anticylonic, the highest barometer lying off the west coast of Ireland. In Dublin the weather was chiefly cold—the atmosphere being often raw and damp. Westerly to northerly winds prevailed. On Wednesday a considerable fall of snow and hail occurred on the Wicklow coast, while dry clear weather and frost were experienced in the city. A thaw on Thursday evening was followed by two dull damp days. The barometer ranged between 29·646 inches at 9 p.m. of Sunday and 30·129 inches at 9 p.m. of Saturday—the mean pressure for the week being 29·904 inches. The mean temperature was 35·6°, the highest being 44·3° on Saturday; the lowest, 25·1° on Thursday. Rainfall was recorded on two days—the total amount being ·098 inch, and the maximal fall in 24 hours being ·072 inch on Sunday.

The last week, ending on Saturday, the 31st, was very cold over the entire Continent of Europe, and particularly so over the more northern and central countries. Heavy falls of snow occurred in Germany, Austria, and Spain, while occasional showers of snow, sleet, or cold rain fell in the north and east of the United Kingdom. On Tuesday, the 27th, and Saturday, the 31st, the thermometer fell to 8° or 9° below freezing point over England. On the Continent the weather was much more severe, the thermometer falling many degrees below zero over Finland and Northern Russia on several occasions, and to some degrees below zero even in Southern Germany on the night of the 31st. During the week ~~ended 31st December~~, a very cold, raw, damp, dull spell of weather was experienced. The mean temperature was nearly 4° below the average, and the winds—although light—were chiefly from polar points of the compass. In Dublin, the sun remained invisible after Wednesday. Temperature ranged between 43·4° on Sunday (Christmas Day), and 29·4° on Wednesday—the mean of the 9 a.m. values being 36·9°. The mean height of the barometer was 30·146 inches—pressure decreasing from 30·328 inches at 9 a.m. of Friday, to 29·878 inches at 9 p.m. of Saturday. The rainfall amounted to ·126 inch, of which quantity ·065 fell on Wednesday. There were three "rainy days."

From January 1st up to and including December 31st, rain fell in Dublin to the amount of only 16·601 inches on but 160 days—the average for the twelve months based on twenty years' observations being 28·015 inches, and 195·6 rainy days. Thus, the rainfall was equal to only 59·3 per cent. of the average, while the rainy days were equal to 8·22 per cent. of the average.

At Greystones, Co. Wicklow, the rainfall in December amounted to 1·95 inches, distributed over 16 days.